SUSTAINABILITY COORDINATOR TOOLKIT

City of Rochester

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EDF Climate Corps Fellowship | Summer 2016

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Introduction

This toolkit provides a compilation of best-in-class resources for the City of Rochester to use in the scoping and development of a Sustainability Coordinator position, as well as resources for the Sustainability Coordinator to reference once hired.

Resources are included from the following institutions; more information can be found on their websites:

- Urban Sustainability Directors Network
    - The Urban Sustainability Directors Network (USDN) is a peer-to-peer network of local government professionals from cities across the United States and Canada dedicated to creating a healthier environment, economic prosperity, and increased social equity. Our dynamic network enables sustainability directors and staff to share best practices and accelerate the application of good ideas across North America.

- Partnership for Sustainable Communities
    - On June 16, 2009, the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA) joined together to help communities nationwide improve access to affordable housing, increase transportation options, and lower transportation costs while protecting the environment.

- EVO/IPMVP
    - Efficiency Valuation Organization (EVO) is the only non-profit organization in the world solely dedicated to creating measurement and verification (M&V) tools to allow efficiency to flourish.

- Sustainable Endowments Institute (SEI) and GRFs
    - **The Sustainable Endowments Institute**, in collaboration with 16 partner organizations, has launched The Billion Dollar Green Challenge to help nonprofit institutions achieve sizable energy savings through the use of green revolving funds. Participating institutions will achieve reductions in operating expenses and greenhouse gas emissions, while creating regenerating funds for future projects.

Urban Sustainability Director's Network Resources

LOCAL GOVERNMENT SUSTAINABILITY DIRECTOR – JOB DESCRIPTION

This job description was developed from a 2011 survey of 82 members of the Urban Sustainability Directors Network. It is not a model job description, because there is so much variation in the responsibilities and competencies of local sustainability directors. Instead, it is a standard template that offers composite descriptions.

Generic Title: Director of Sustainability Office of City or County

Local Title

May vary – including Chief Sustainability Officer, Sustainability Coordinator, Environmental/Energy and Sustainability Manager, Facilities and Sustainability Manager, Director of Sustainability and Strategic Planning, Director of Sustainability and Long-term Planning, Climate and Sustainability Program Coordinator, Manager of Urban Design, Director of Environmental Planning, Environmental Initiatives Program Manager, Director of Natural Resources Department, Director of Environmental Quality, City Planner.

Job Definition

Is responsible for managing, coordinating, facilitating, and advising the development, implementation, monitoring, and improvement of local government policies, programs, and initiatives that promote local environmental, energy, economic, and social sustainability.

Reporting Structure

Typically reports to Mayor, City/County Manager and/or City/County Council. May be a staff position within mayor/manager/council office, or a department director, deputy director, or staff position within a department or agency taking lead on local sustainability.

Examples of Work:

- Lead the planning of city/county sustainability initiatives and programs.
- Directly manage sustainability initiatives and programs.
- Facilitate collaboration of interdepartmental/agency task forces, teams, and working groups.
- Administer the city/county local sustainability office, staff, and budget.
- Coordinate department/agency directors/managers in managing, measuring, and monitoring sustainability initiatives and programs.
- Advise and respond to elected officials about sustainability issues.
- Conduct policy analysis, development & advocacy.

- Promote sustainability with employees in the government and as a part of the government's culture.
- Communicate sustainability goals and progress to the public.
- Develop and implement sustainability measuring and monitoring systems.
- Engage with state and/or federal governments, and/or other local governments in region.
- Engage with community and/or interest/stakeholder groups (e.g., neighborhood organizations, environmental advocates).
- Engage with vendors of sustainability technology, equipment, tools, etc.
- Fundraising (grant development) for sustainability office and projects.

REQUIREMENTS:

Education

Graduation from an accredited college or university with a Master's degree in relevant field: planning, environmental science, sustainable business, engineering, public administration/policy.

Experience

Three to five years of experience in the field of urban sustainability, working professionally in the government, business, consulting, nonprofit, and/or academic sectors.

Knowledge and Abilities

- Knowledge of current models and programs for urban sustainability, including federal and state policies and measurement/monitoring of sustainability.
- Knowledge of climate change science, principles of energy and environmental management, social behavior change, and economic development.
- Knowledge of public administration and public policy development, including government financing mechanisms and intergovernmental relations.
- Knowledge of organization-change management strategies and methods.
- Ability to direct/support systems analysis, strategic planning processes, organization development processes.
- Ability to effectively analyze and develop programs, policies, and initiatives.
- Ability to manage projects and administer programs and/or an Office of Sustainability and supervise staff, and to coordinate programs with other administrative offices.
- Ability to develop positive relations with other departments and agencies, and elected officials, and to facilitate collaborative planning processes.
- Ability to develop performance measurement systems and initiate continuous improvement processes.

Salary Range: Varies considerably, depending on position's responsibilities and size of city, from about $125,000-$150,000 for a city department director to about $40,000-$50,000 for a city staff position. Average salary for the position is $70,000-$80,000.

Stages of Sustainability Institutionalization Checklist

Four steps to help you track the progress of your organization through the stages of each sustainability function and anticipate future activities

2. STAGES: What are the stages of sustainability institutionalization?

3. ACTIVITIES: In which of these activities does your organization engage?

1. FUNCTIONS: What are the key functions of sustainability offices?

	Stage 1: Set Vision & Direction	Stage 2: Engage/ Empower Stakeholders	Stage 3: Capture in Performance Management System	Stage 4: Embed in Continuous Improvement
Planning Government's Sustainability Initiatives Develop vision, definition, case, goals for sustainability & role of local government. Develop initiatives, plans, budgets – within departments, across government. Establish performance metrics, scoreboards, and progress reporting processes. Study other cities' sustainability efforts. Coordinate sustainability planning/goals across departments.	☐ Elected officials articulate vision, definition, and case for sustainability, and local government's role in making sustainability happen ☐ Elected officials & top managers identify & announce first sustainability initiatives/action agenda/blueprint ☐ Some benchmarking with other cities' sustainability efforts	☐ Departments engage in further development of initiatives focusing on greening internal government operations (recycling, green buildings, etc.) ☐ Departments produce & elected officials adopt plans/budgets for achieving goals	☐ Establish prioritized performance goals & metrics: government-wide, community-wide, and by department ☐ Elected officials set up progress report process for departments	☐ Departments assess performance and produce improvement plans/budget adopted by elected officials ☐ Departments increasingly set shared goals requiring high degree of collaboration
Developing Government Culture of Sustainability Engage employees in thinking & caring about sustainability & trying new behaviors. Conduct internal communications and education to promote culture of sustainability. Embed sustainability goals and initiatives in employees' position descriptions & performance evaluations.	☐ Departments engage employees in thinking & caring about sustainability and trying new behaviors ☐ Internal communications and education to promote culture of sustainability	☐ Employees generate new initiatives & model sustainability behaviors for community	☐ Departments' sustainability goals and initiatives embedded in employees' position descriptions & performance evaluations	☐ Government employees make culture of sustainability increasingly the norm
Developing Community Support and Action Communicate with public & media about sustainability vision & initial initiatives. Develop Web site(s) with resources for sustainability actions. Partner with civic organizations to undertake community visioning processes and community-based sustainability education. Engage stakeholders & constituencies in developing plans and partnering with government on external initiatives. Engage leaders of communities in region in coordinating & collaborating. Develop community-wide sustainability scoreboard. Support public outreach/education to increase community awareness of benefits.	☐ Elected officials/top managers communicate with public & media about sustainability vision & initial initiatives ☐ Departments develop Web site(s) with resources for sustainability actions	☐ Government officials partner with civic organizations to undertake community visioning processes and community-based sustainability education ☐ Government officials engage stakeholders & constituencies in developing plans and partnering with government on external initiatives ☐ Government and civic leaders engage leaders of other communities in region in coordinating & collaborating on sustainability	☐ Growing number of community partnerships spread sustainability actions—with measurable goals—outside of government ☐ Government and community groups develop community-wide sustainability scoreboard ☐ Government and community groups drive public outreach/education with measurable increase in community awareness of benefits	☐ Community holds significant expectation that sustainability initiatives will be sustained and expanded
Building Government's Structures for Sustainability Create sustainability function with staff & funding (short term). Build connections with outside expertise and peers in other cities. Fundraise to support budget & staffing for sustainability initiative development. Create technical advisory groups. Create incentives (rewards, sanctions) for departments/agencies achieving goals. Adopt performance scoreboard for publicizing & monitoring. Create government-wide sustainability knowledge creation and innovation function. Use "horizontal coordination" among departments to achieve shared goals.	☐ Elected officials/top managers create sustainability function with staff & funding (short term) ☐ Top managers build connections with outside expertise and peers in other cities ☐ Government officials fundraise to support budget & staffing for sustainability initiative development	☐ Government officials establish a regional structure for sharing information, projects ☐ Government officials create technical advisory groups ☐ Elected officials/top managers increasingly fund some sustainability functions from GF or restricted funds	☐ Elected officials set incentives (rewards, sanctions) for departments/agencies achieving goals ☐ Elected officials adopt performance scoreboard for publicizing & monitoring ☐ Elected officials/top managers create government-wide sustainability knowledge creation and innovation function	☐ Elected officials and top managers use "horizontal coordination" among departments to achieve shared goals ☐ Government and community groups support community-based sustainability education ☐ Elected officials and top managers revamp functions, structure, funding & staffing of sustainability office to increase effectiveness and reflect growth of other structures inside and outside government

4. NEXT STEPS: Based on the activities left unchecked in your current stage and the following stage(s), consider what specific skills/ knowledge you may need in the long term. See Tool #3.

Self-Assessment of Competencies for Sustainability Coordinator

Background and Overview:

In the 2011 USDN Professional Development survey, ten process skills and sixteen content knowledge areas were identified by sustainability directors as competencies needed to perform their jobs.

The self-assessment tool in this Excel file, which builds on a time management framework originally developed by Steven Covey, provides you with a way to focus on the professional development opportunities that will have the most impact.

For each skill and knowledge area, the tool requires three inputs from you:
1) your existing ability
2) the importance of that skill or knowledge area to your position
3) the urgency of your need for professional development in that skill or knowledge area.

Based on those three factors, the tool generates a menu of recommended professional development delivery models for each competency. You can further prioritize by filtering results based on the three inputs: ability, importance, and urgency.

Directory of Sustainability Professional Development Providers

Background and Overview:

This directory tool was developed using a 2011 market scan of the sustainability field, and includes nearly 200 nonprofit, academic, government, and for-profit providers. Users can browse the tool using filters on one or multiple fields, including geography, provider type, the skills and knowledge areas covered by their professional development products/services, and professional development delivery methods. If the output of the self-assessment tool is used as a guide, the user can conduct a more strategic search based on the recommended professional development delivery models for the desired skills and knowledge areas.

General Use Guidelines:

This directory contains 194 institutions providing professional development services across a range of process skills, content knowledge categories, and delivery models. The Directory organizes providers by whether or not they offer the various process skills/content knowledge categories/delivery models, and also contains additional information on each provider (e.g. website, accreditation). After exploring this directory, it is critical that you research institutions in which you have an interest to ensure that they meet your own, highly individualized professional development needs. We encourage you to explore these institutions by reading through their websites, asking your contacts for their own opinions, and contacting the provider directly to obtain additional information. Additionally, inclusion in this provider directory should not be taken to imply any endorsement of any individual provider, or to imply that the claims of each provider have been individually vetted. Rather, this directory reflects the results of a USDN commissioned secondary market scan designed to create a foundational understanding of professional development services and service providers in areas of interest to USDN members.

The Directory can be found here.

Sustainable Communities Indicators

Using Indicators and Performance Measurement

What are indicators?

Indicators help cities, communities, and other groups measure progress toward their goals.[1] Indicators can be used to compare the status of different places or track change over time for an issue of importance. This information helps people understand the results of policies, identify where progress has been made, and highlight changes or disparities that are inconsistent with community goals.

What are the different types of indicators and what information do they provide?

Different types of indicators are appropriate for different applications. The World Health Organization divides indicators into four types: descriptive, performance, efficiency, and total welfare (aggregate). These types are not necessarily exclusive. For instance, a community may select a performance indicator that is also a descriptive or efficiency indicator. Nonetheless these categories help to clarify different ways in which indicators are used to measure outcomes.

- Descriptive indicators measure the current state of a community with regard to one specific issue of interest, such as acres of parkland or vehicle miles traveled in the past year. These indicators can be used to provide a snapshot assessment of current conditions, compare conditions in different neighborhoods or places, or measure trends over time.

- Performance indicators (also known as performance measures) are designed to assess the outcomes of a particular policy or program, such as the percentage of all new development occurring within a designated urban growth area, . Performance indicators are often linked to a baseline reference value in order to assess whether progress is being made over time as well as the rate of progress. Performance indicators are also often linked to a specific policy target. For instance, a community may declare that by the year 2016 98% of all new commercial and residential development will be located within designated urban growth areas. Then the community can measure progress towards this goal to help assess whether current laws, policies, and programs are sufficiently effective in channeling new growth.

- Efficiency indicators show the efficiency of production and consumption processes, such as vehicle miles traveled per capita or energy use per household. Efficiency indicators are often the most useful to track over time as they facilitate accurate comparisons by accounting for background changes such as population growth.

- Aggregate indicators combine separate measures about several different community dimensions into one indicator (or index) that illustrates overall progress. They distill large amounts of information down to one value that summarizes a system as a whole. Examples include, a community sustainability score or the Dow Jones Index. Aggregate indicators efficiently communicate a lot of information but, due to the information lost in aggregation, are often too simplified to inform action.

Indicators:

Indicator Name	Indicator Topic	Issue of Concern	Geographic Scale
Intersection Density	Land Use, Transportation	Access and equity, Community and Sense of Place, Environmental quality, Public health	Neighborhood/Corridor, Project
Access to transit: Percentage of jobs within walking distance of transit service	Land Use, Transportation	Access and equity, Affordability, Economic competitiveness, Environmental quality	County, Municipality, Region
City Fleet: Gas Mileage	Transportation	Economic competitiveness, Environmental quality	County, Municipality, Region
Walkability	Land Use, Transportation	Access and equity, Community and Sense of Place, Environmental quality, Public health	County, Municipality, Neighborhood/Corridor
Fuel Consumption/Purchase	Transportation	Economic competitiveness, Environmental quality	County, Municipality, Region
Access to Safe Parks & Recreation Areas: Percent of Residents within Walking Distance of Recreation Land	Housing, Land Use, Transportation	Access and equity, Community and Sense of Place, Public health	County, Municipality, Neighborhood/Corridor, Project, Region
Crime Rate in Parks and Recreation Areas	Land Use	Access and equity, Community and Sense of Place, Public health	County, Municipality, Neighborhood/Corridor, Region
Access to Healthy Food Options	Housing, Land Use, Transportation	Access and equity, Public health	County, Municipality, Neighborhood/Corridor, Region
Acres of Brownfield Redeveloped/Remediated	Housing, Land Use	Access and equity, Community and Sense of Place, Economic competitiveness, Environmental quality, Public health	County, Municipality, Region
Growth in previously-developed areas	Housing, Land Use	Access and equity, Environmental quality	County, Municipality, Region
per Capita	Land Use	Access and equity, Community and Sense of Place, Environmental quality, Public health	County, Municipality, Neighborhood/Corridor, Project, Region
Acres of Newly Developed Land for New Residents	Housing, Land Use	Access and equity, Environmental quality	County, Municipality, Region
Bike Parking per Capita	Land Use, Transportation	Access and equity, Community and Sense of Place, Environmental quality, Public health	County, Municipality, Neighborhood/Corridor, Project, Region

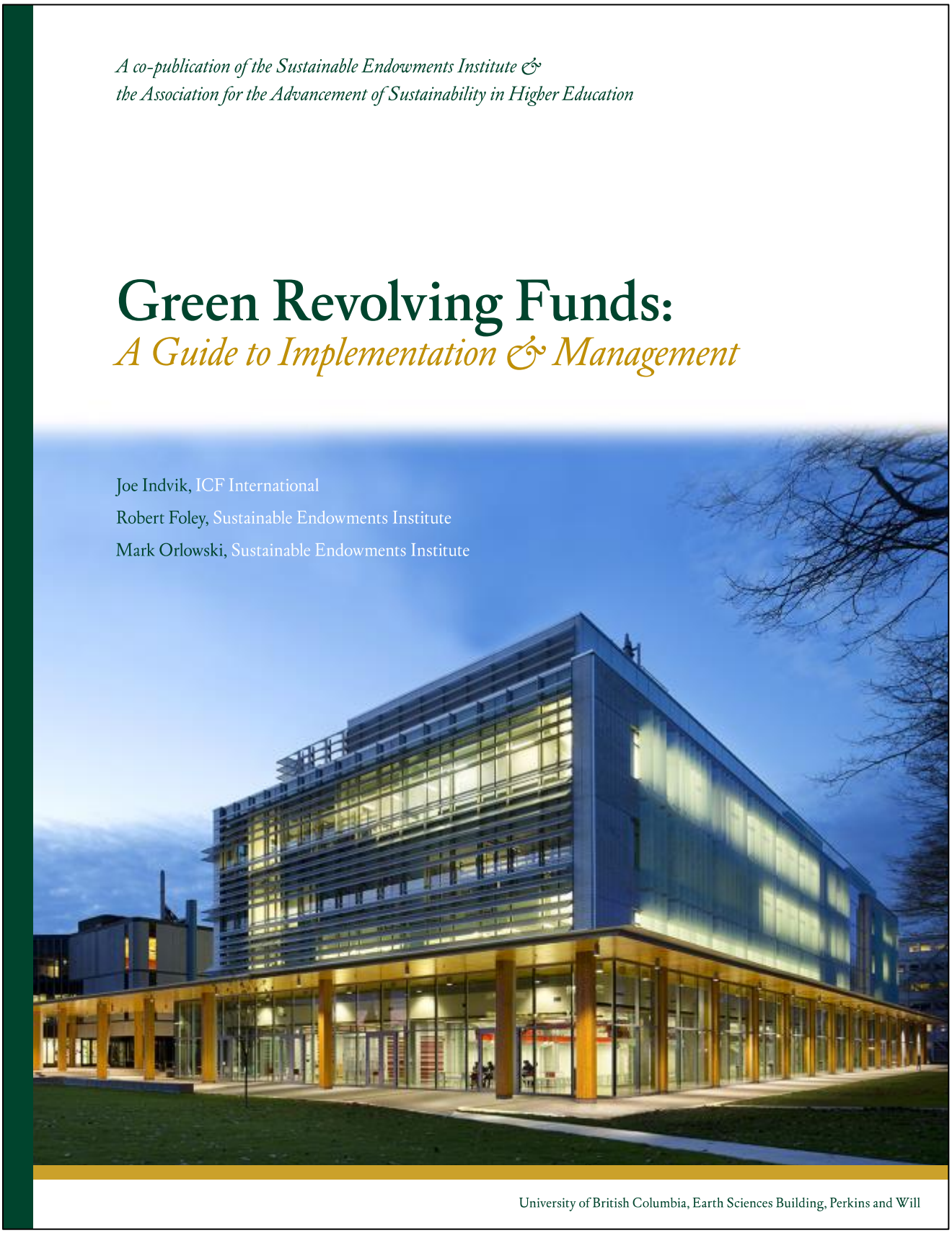
Access to transit: Percentage of population within walking distance of frequent transit service	Housing, Land Use, Transportation	Access and equity, Affordability, Environmental quality	County, Municipality, Region
Residential Energy Use	Housing, Land Use	Access and equity, Economic competitiveness, Environmental quality	County, Municipality, Neighborhood/Corridor, Region
Percentage of population served by transit	Housing, Land Use, Transportation	Access and equity, Affordability, Economic competitiveness, Environmental quality	County, Municipality, Region
Arterial Roads with bike lanes	Transportation	Access and equity, Environmental quality	County, Municipality, Region
Residential Unit Vacancy Rate	Housing	Access and equity, Affordability, Community and Sense of Place	County, Municipality, Neighborhood/Corridor, Project, Region
Percentage of New Homes Built Near Transit	Housing, Land Use, Transportation	Access and equity, Affordability, Environmental quality	County, Municipality, Region
Percent of population that lives within ¼ miles of a bike lane/trail	Housing, Land Use, Transportation	Access and equity, Environmental quality, Public health	County, Municipality, Neighborhood/Corridor, Region
Combined Housing & Transportation Costs	Housing, Land Use, Transportation	Access and equity, Affordability	County, Municipality, Neighborhood/Corridor, Project
Location of New Residential Units Permitted	Housing, Land Use	Access and equity, Community and Sense of Place	Municipality, Neighborhood/Corridor, Project
Travel Time to Work	Transportation	Access and equity, Economic competitiveness	County, Municipality, Neighborhood/Corridor, Region
Number of New Residential Units Permitted	Housing, Land Use	Access and equity, Affordability	County, Municipality, Region
Commuter Mode Share	Transportation	Access and equity	County
Public Transportation Ridership	Transportation	Access and equity, Environmental quality	County, Municipality, Neighborhood/Corridor, Region
Mix of Housing Type Permitted for New Construction	Housing, Land Use	Access and equity, Community and Sense of Place	County, Municipality, Region
Bicycle Infrastructure	Land Use, Transportation	Access and equity, Community and Sense of Place, Environmental quality, Public health	County, Municipality, Neighborhood/Corridor, Region

Pedestrian Infrastructure	Transportation	Access and equity, Community and Sense of Place, Environmental quality, Public health	County, Municipality, Neighborhood/Corridor, Project
Vehicle Miles Traveled Per Capita	Transportation	Access and equity, Environmental quality	County, Municipality, Region

Green Revolving Fund Resources

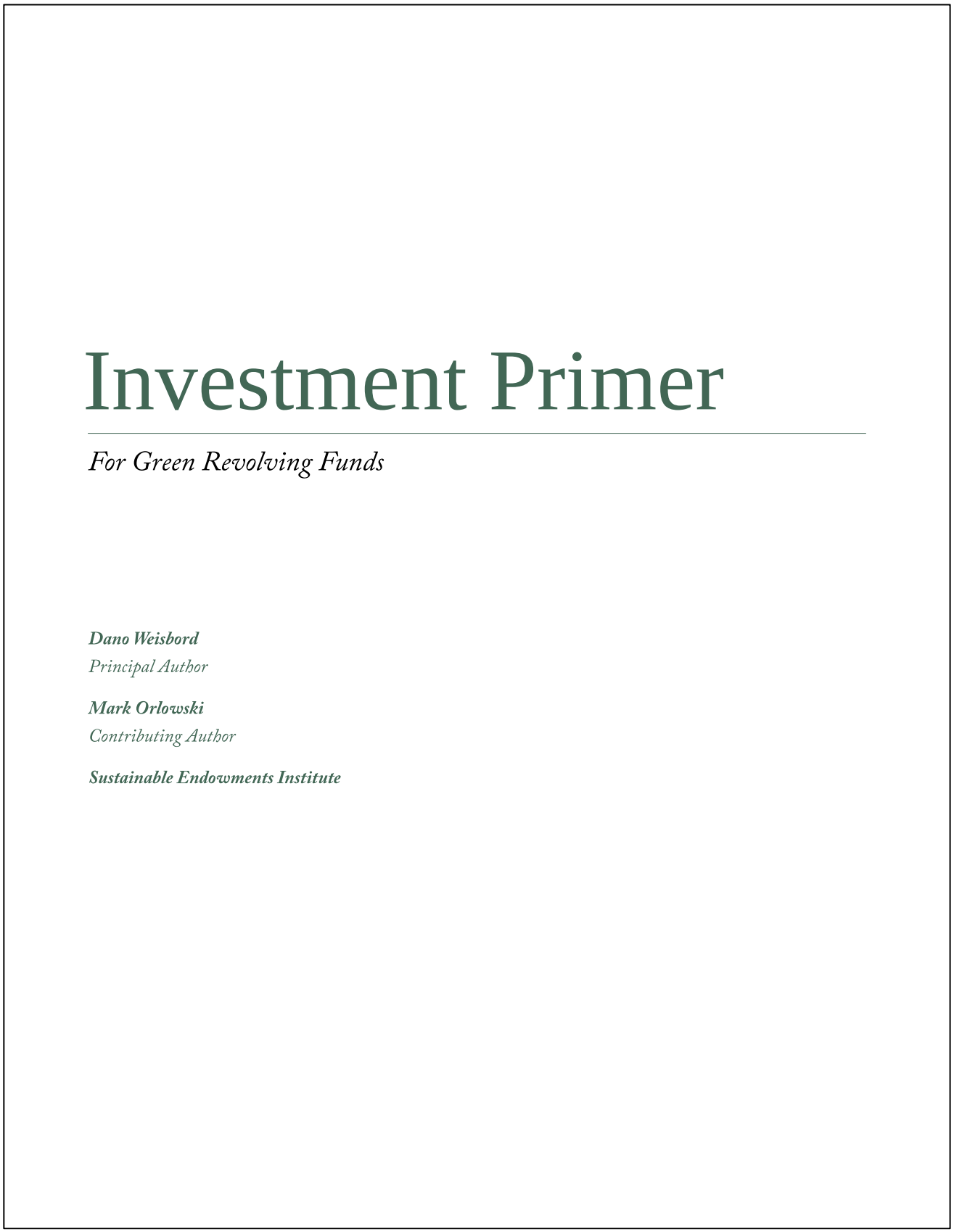
Guide to Implementing a GRF

Please click on the image below to open the complete guide



GRF Investment Primer

Please click on the image below to open the full GRF Investment Primer Guide



Investment Primer

For Green Revolving Funds

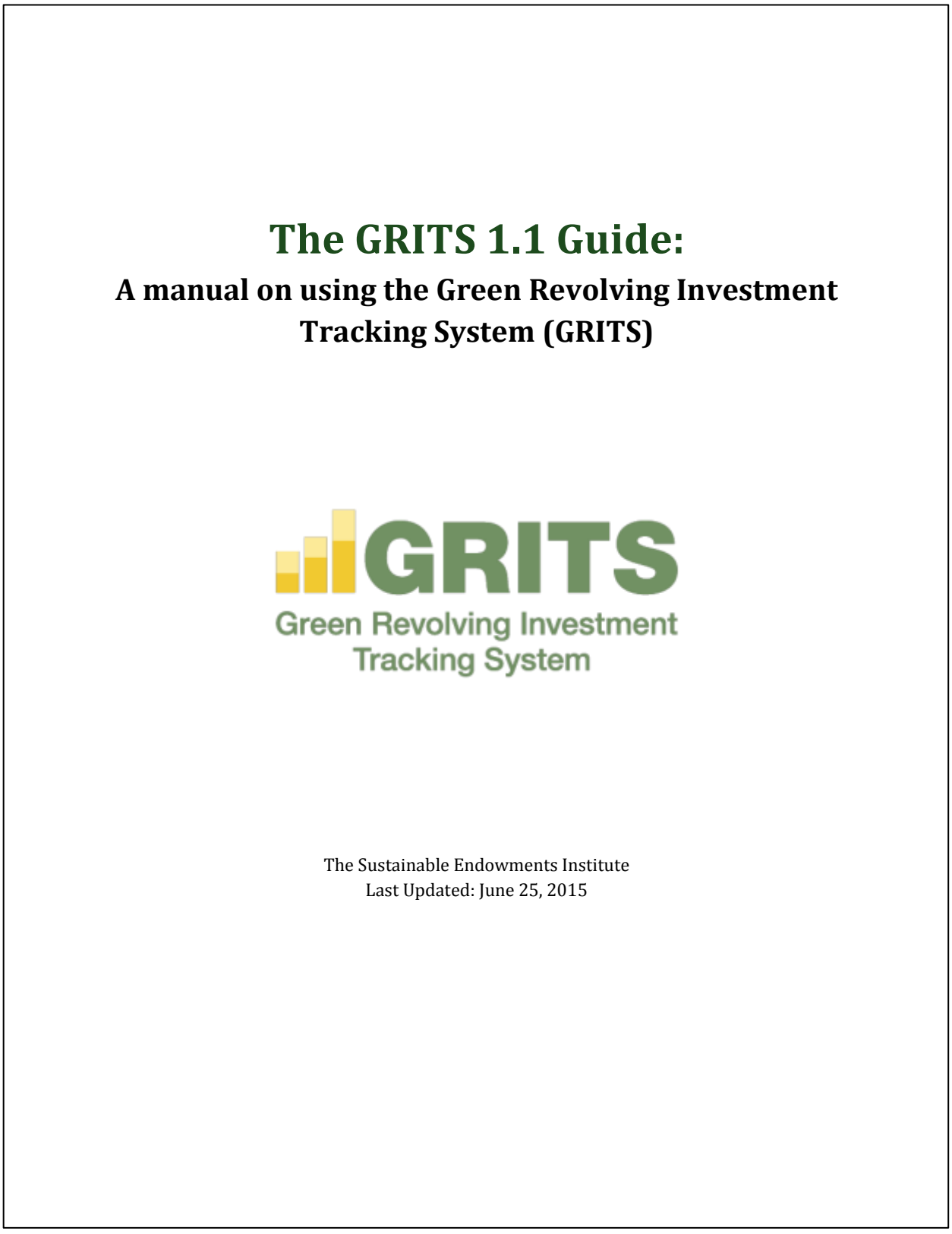
Dano Weisbord
Principal Author

Mark Orlowski
Contributing Author

Sustainable Endowments Institute

Green Revolving Investment Tracking System (GRITS) Guide

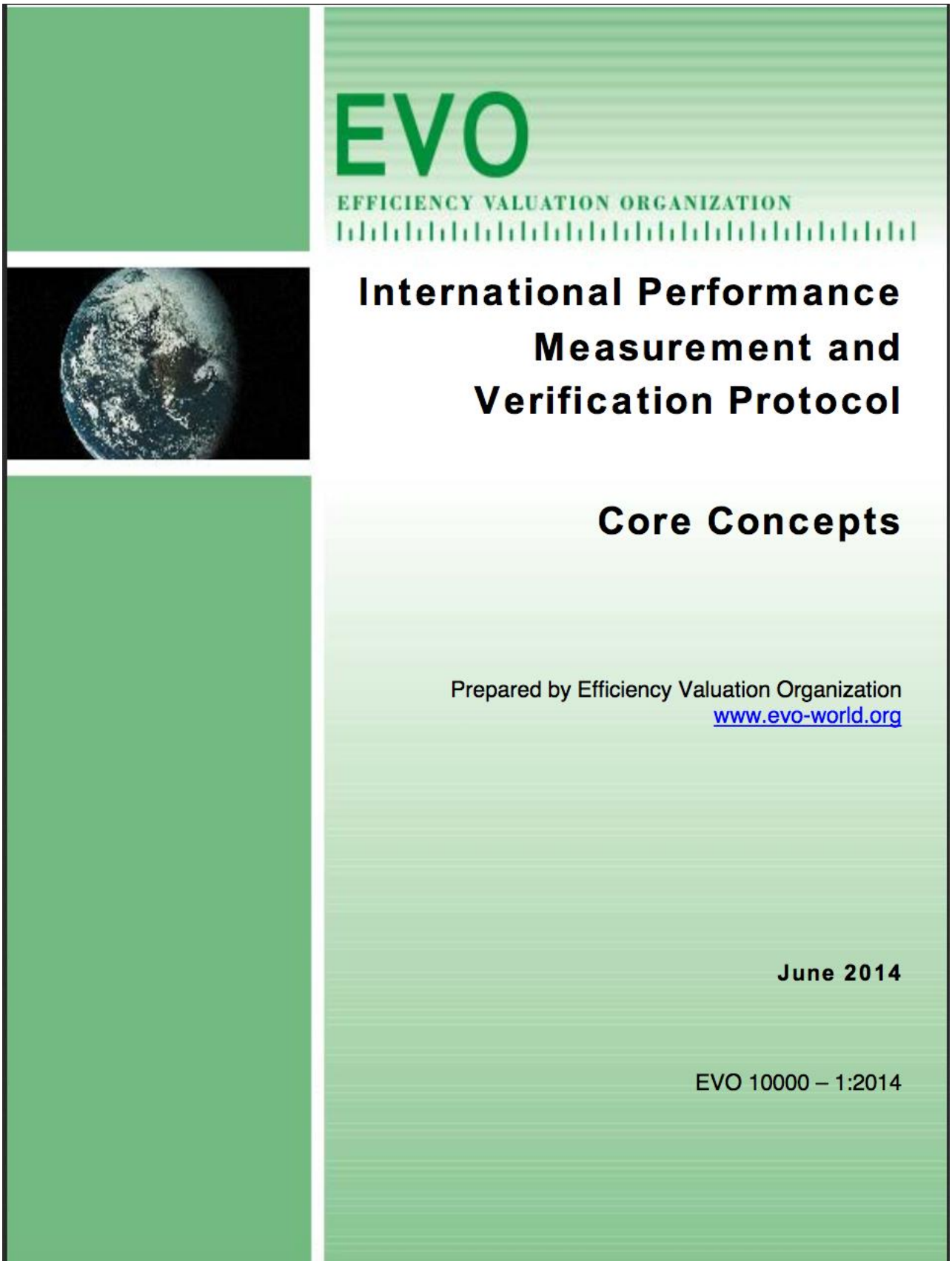
Please click on the image below to open the full GRITS Guide



Measurement and Verification Resources

Full Guide to IPMVP

Please click on the image below to open the whole guide



M&V Adherence Criteria

Efficiency Valuation Organization

IPMVP® Core Concepts 2016 Adherence Criteria

May 2016

#	Criteria (IPMVP Core Ch 7)	Short Description	Review Checklist (indicate yes/no finding for each line)
7.1 Criteria for an IPMVP Adherent Plan			
1	**Facility and Project Overview**	–Provide an overall description of the facility and the proposed project along with the list of all the measures that are included as part of the project. –Provide references to any energy audit reports or other analysis that was used to scope the project.	Is the overall project description adequate and clear?
			Are project analysis and design documents available?
2	**ECM Intent**	–Describe the ECM, its intended result and how savings are being realized.	Is the ECM description clear?
			Savings description clear?
3	**Selected IPMVP Option & Measurement Boundary**	–Specify the chosen IPMVP Option (version number and Volume number) –Identify the measurement boundary of the savings determination. –Describe the nature of any interactive effects beyond the measurement boundary together with their possible effects and actions taken if any.	Is appropriate and correct M&V guideline and option used?
			Measurement boundary clearly identified?
			Are the interactive effects quantified?
			Do M&V activities match declared M&V option?
4	**Baseline- Period, usage & conditions**	–Identification of baseline period –Identify and include baseline energy consumption data –Identify and include operational data coinciding with the energy data –Identify and include static factors that might effect baseline energy data.	Identification of the baseline period (i.e. start and end dates, etc.)
			Identification of current equipment condition
			Are required baseline energy consumption included?
			Are required independent and operational data included?
			Are static factors coinciding with the energy data identified?
5	**Reporting Period**	–Identify the reporting period	Is a specific description of the reporting period included?
			If the reporting period is a period of time, are start and end dates clearly identified?

#	Criteria (IPMVP Core Ch 7)	Short Description	Review Checklist (indicate yes/no finding for each line)
6	**Basis for Adjustment**	~Declare the set of conditions to which all energy measurements will be adjusted (forecast, backcast, chaining). ~Describe what anticipated conditions affect energy use and what data and calculations are required to make baseline adjustments. ~Describe possible events - expected or unexpected - not directly related to the EEMs but affecting energy use and how thier impact will be determined, and how savings would be adjusted based on them.	Is the basis for adjustment clearly defined?
			Are described routine adjustments clearly identified?
			Are non-routine adjustments presented and the required data and methodology clearly described?
			Is the data required and methodology for adjusting energy use reasonable?
7	**Calculation Methodology/Analysis Procedure**	~Specify the exact data analysis procedures, algorithms and assumptions to be used in each savings report. For each mathematical model used, report all of its terms and the range of independent variables over which it is valid. ~Description of methodology to calculate baseline period energy use. ~Description of how baseline adjustments will be made (routine and non-routine) ~Description of how savings will be determined (step-by-step preferred) ~Description of error analysis/uncertainty, parametric studies conducted	Were all analysis procedures clearly and logically described?
			Was the methodology for describing baseline adjustments clearly described?
			Was the methodology for calculating savings clearly described?
			Was the error analysis/uncertainty clearly described?
			Are all manipulations of data properly documented and follow general engineering methods?
8	**Energy Prices**	~Specify the energy prices that will be used to value the savings, and whether and how savings prices will be adjusted if prices energy rates change in future	Are the energy prices and escalation rates clearly identified for each of the energy units?
			Is there a plan described for how to adjust the prices annually?

#	Criteria (IPMVP Core Ch 7)	Short Description	Review Checklist (indicate yes/no finding for each line)
9	**Meter Specifications**	~For non-utility meters, specify: meter characteristics (accuracy, resolution), meter commissioning procedure, routine calibration process, and method of dealing with lost data	Is meter described including make, model and general characteristics?
			Is meter full scale value, units and % accuracy / resolution included?
			Is meter calibrated and commissioned?
			Is a plan for mitigation of any lost data in place?
10	**Monitoring Responsibilities**	~Assign responsibilities for recording and reporting the energy data, independent variables and static factors within the measurement boundary during the reporting period and any witnessing requirements.	Are responsibilities for each of the static and independent variables clearly defined data parameters identified?
			Are witnessing requirements described?
11	**Expected Accuracy**	~Evaluate the expected accuracy associated with the measurement, data capture, sampling and data analysis. ~This assessment should include qualitative and any feasible quantitative measures of the level of uncertainty in the measurements and adjustments to be used in the planned savings report	Are the savings uncertainities identified? (sources of error?)
			Are the uncertainties properly categorized into sampling, measurement, modeling type?
			Is overall uncertainty calculated?
12	**Budget**	~Define the budget and the resources required for the savings determination, both initial setup costs and ongoing costs throughout the reporting period.	Are M&V costs including setup costs, costs of gathering data, data analysis costs, report generation costs identified? Are those costs reasonable (~3-20% of savings)?
13	**Report Format**	~Specify how results will be reported and documented. A sample of each report should be included.	Are the reporting formats clearly described?
			Are sample report formats provided?
14	**Quality Assurance**	~Specify quality-assurance procedures that will be used for savings reports and any interim steps in preparing the reports.	Are QA/QC Procedures/steps identified?
			Are reporting, documentation and QA procedures in place?

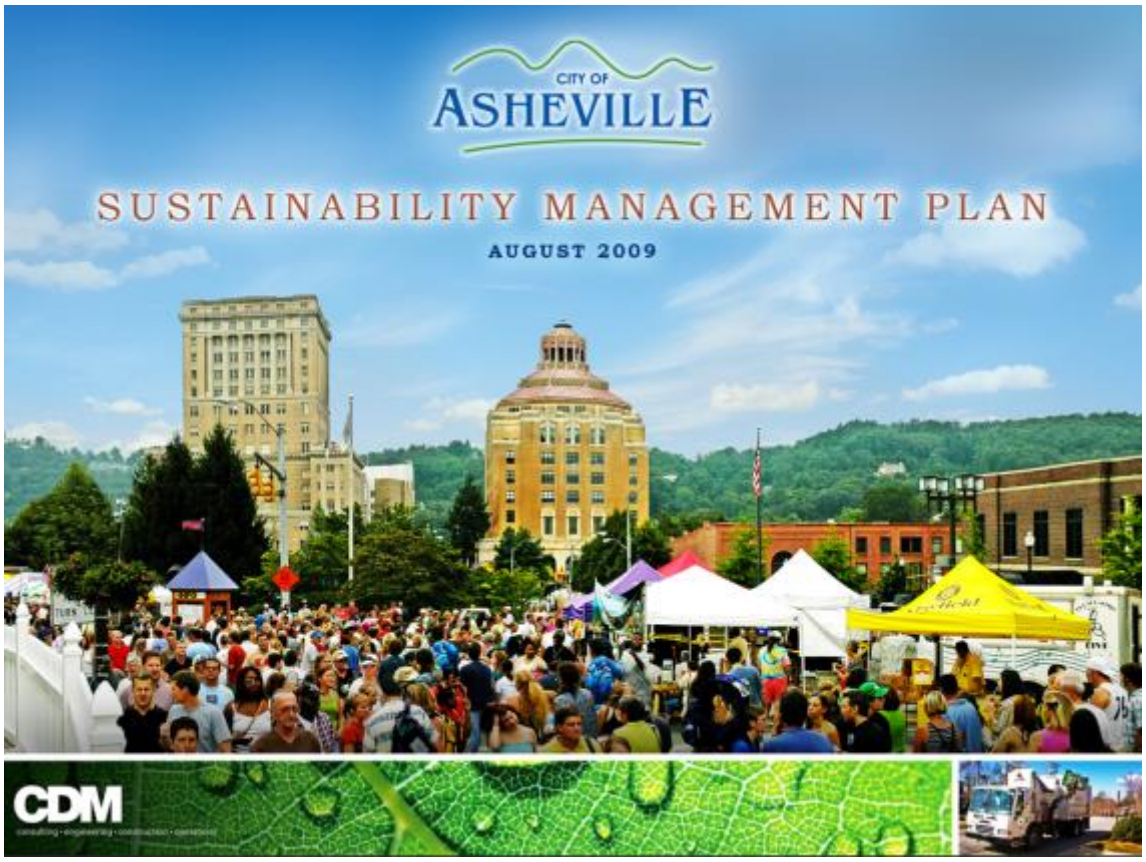
#	Criteria (IPMVP Core Ch 7)	Short Description	Review Checklist (indicate yes/no finding for each line)
7.2 Additional M&V plan requirements for Option A			
1	**Justification of Estimates**	~Clearly identify the variables and their values. Report range of savings over range of plausible values of the estimated parameters.	Are estimated variables and their effect on savings over plausable range insluded?
2	**Periodic Inspections**	~Specify the periodic inspections that will be performed in the reporting period to verify that equipment is still in place and operating as assumed.	Are periodic inspections specified and scheduled?
7.3 Additional M&V plan requirements for Option D			
1	**Software Identification**	~Report the name and the version number of the simulation software that's used to calculate savings	Is simulation software and version clearly reported?
2	**Input / Output**	~Provide copies of the input files, output files, and weather files (or weather file identification) used for the simulation, including any post-processing or presentation development methods and calculations	Are all required input and output data provided?
			Are calculations and findings correct and clear?
3	**Measured data**	~Describe the process of obtaining measured data including which input parameters were measured and which input parameters were estimated. ~Include summary of the data measurements	Is process for obtaining data clear?
			Are all data point values documented, whether they are estimates or actual values?
4	**Calibration**	~Report the energy and operating data used for calibration including the accuracy with which the simulation results match the calibration energy data	Is a comparison of usage to utility or metered data provided?
			Is calibration accuracy calculated and presented?
5	**Future changes**	~Provide a description of the method for making relevant non-routine adjustments	Are planned or possible non-routine changes listed and described
			Is a plan specified for addressing needed or potential modifications?

Case Studies

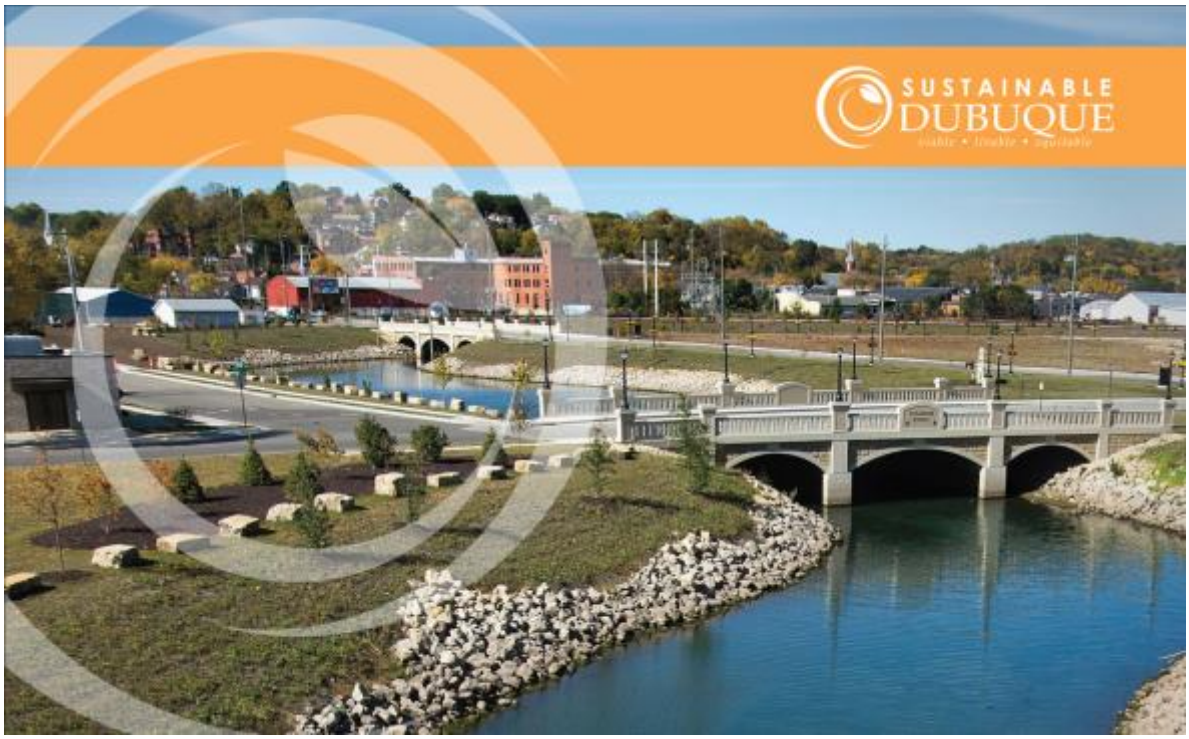
Sustainability Action Plans

Please click on the images below to access the full reports

Asheville, NC:



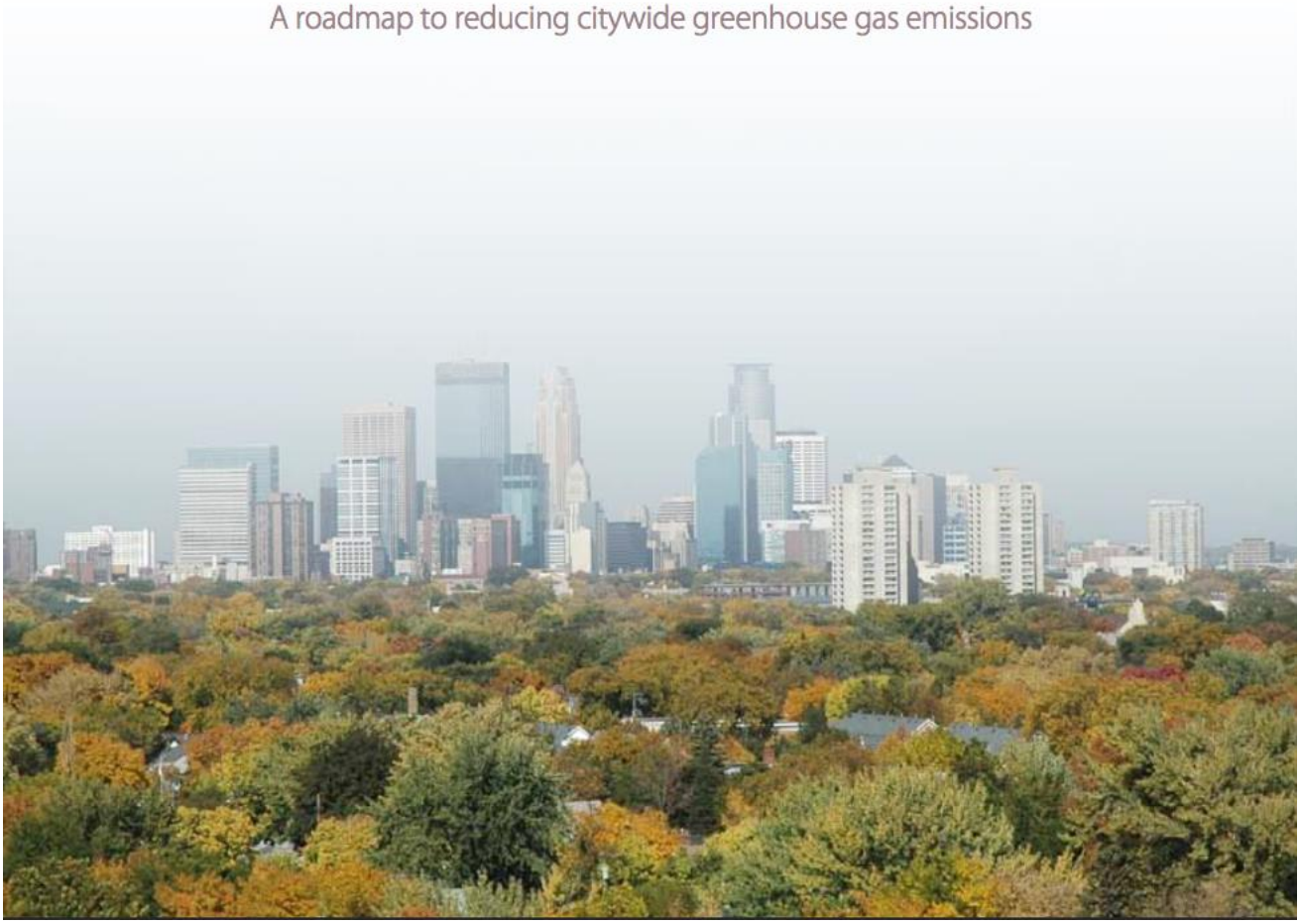
Dubuque, IA



Minneapolis

Climate Action Plan

A roadmap to reducing citywide greenhouse gas emissions



LED Street Light Conversions

Guide to LED Conversions

A Step-by-Step Approach to Improving Outdoor Lighting, Saving Energy and Reducing Maintenance Costs.

Algona, Iowa

Before: 250W HPS (295 System Watts) **After: 104W and 176W LED**

LED Street Light Energy Efficiency Case Study

Asheville, NC

Prepared By John Cleveland for the USDN Innovation Working Group

9.3.11

Retro-Commissioning Fact Sheet: